this means of diagnosis, is hardly applicable to cases of the character here referred to. He also suggests, as a precaution, that only small quantities of fluid should be swallowed. The patient, however, is either inclined to take fluid in small quantities, or else suffers no apparent inconvenience from larger amounts.

BOSTON, Nov. 1876.

ART. II.—*A Contribution to the Study of Animal Temperature.* Preliminary Note. By ROBERTS BARTHOLOW, M.D., Professor of the Theory and Practice of Medicine and of Clinical Medicine in the Medical College of Ohio.

IN some "experiments of control" during a course of investigations into the actions of antipyretic medicines, I ascertained that the temperature of rabbits confined in a Czermak's support declined sensibly. If complete immobility of the animal be secured, the rectal temperature begins at once to lessen, and in an hour the declination has reached easily measurable proportions. After some hours the decline of temperature is very marked. The observations were taken with an Arnold's clinical thermometer, which are, I am informed by the maker, compared with the Greenwich standard. Such comparative tests as I applied indicated that the thermometer used was fully up to the average of accuracy of the most carefully constructed clinical thermometers. The Czermak's support, made in the usual way, held the rabbit quite immobile. The temperature of the laboratory and of the rabbit's rectum was taken before the animal was placed in the apparatus. It was found that the rabbit's temperature declined in a nearly uniform ratio.

Expt. 1. Rabbit of four months; weight 34 ounces. Temperature of the air 80° F. Temperature of the rectum 102° F. Fastened in the support.

At the end of the first hour the rectal temperature was	101°.5
At the end of the second hour " " "	101°
At the end of the third hour " " "	100°
At the end of the fourth hour " " "	99°

When released from confinement the rabbit crouched in a corner, the limbs being stiff and swollen. At the end of the first hour of freedom, when the rabbit had recovered in large part from the immediate effects of the confinement, the temperature of the rectum had risen to 102°. In oscillating from the lowest point the temperature did not stop at the normal, but passed to the other side, reaching in three hours 103°, and in six hours 103°.5. At the expiration of twenty-four hours, when I had arranged to repeat the experiment with the same animal, I found the temperature still at 103°.

Expt. 2. Same rabbit as in preceding observation. Temperature of the air 82°. Rectal temperature 103°. Fastened in the Czermak support. Notwithstanding the abnormal elevation of temperature, the decline in body-heat, under the influence of complete immobility, was in nearly the same ratio as before.

In one hour the rectal temperature was . . . . . 102°
In two hours " " " . . . . . 101°
In three hours " " " . . . . . 100°
In four hours " " " . . . . . 99°

After release from confinement, in an hour the rectal temperature was 102°.5; in three hours was 103°.

A number of experiments of the same kind with rabbits yielded the same results. Observations with pigeons also demonstrated that complete immobility of the body causes a decline in the temperature of birds. A pigeon may be secured without injury by folding the wings, extending the legs, and then wrapping it in strong paper, leaving a sufficient orifice for the admission of air. The temperature was taken by introducing the thermometer deeply into the gullet.

Expt. 3. Pigeon, fully grown, prepared as above described. Temperature of the air 81°. Temperature of the gullet 107°.

In one hour the temperature of the gullet was . . . 106°.5
In two hours " " " . . . 106°
In three hours " " " . . . 105°
In four hours " " " . . . 104°.5

After an hour of freedom the temperature of the gullet was found to be 107°, or normal. So decided a fall of temperature did not take place in all cases, due, I think, to the great freedom allowed the head and neck in order to secure the admission of air. The decline in temperature was never less than one degree, and usually reached two degrees.

The fact being ascertained that immobility of the body causes a decline in the body temperature, it is obviously necessary to take this result into account in studying the action of antipyretic medicines. Dr. J. L. Anderson, my assistant, and I have made a number of observations to ascertain the gross effects of immobility and of the action of the antipyretic medicine.

Expt. 4. Rabbit; weight 66 ounces. Rectal temperature 102°. Administered, subcutaneously, fifty minims of the official tincture of digitalis. Placed in the support.

In an hour the rectal temperature was . . . . . 98°.5
In an hour and a half the rectal temperature was . . 98°
In three hours " " " . . 97°.8

Expt. 5. Rabbit; weight 64 ounces. Rectal temperature 102°. Injected under the skin 20 minims of the officinal tincture of aconite root. Placed in the support.

In ten minutes the rectal temperature was . . . 101°.5
In twenty " " " " . . . . 101°.2
In forty " " " " . . . . 100°.6
In an hour " " " . . . . 98°.5

Expt. 6. Rabbit; weight 64 ounces. Rectal temperature 102°. Injected, subcutaneously, five minims of the officinal tincture of veratrum viride. Placed in support.

In twenty minutes the rectal temperature was . . . 100°
In forty " " " " . . . 98°
In an hour " " " " . . . 97°.5

Expt. 7. Rabbit; weight 70 ounces. Temperature of the air 76°. Rectal temperature 103°. Injected, subcutaneously, twenty grains of chloral. Placed in the support.

In one hour the rectal temperature was . . . . . 101°
In two hours " " " . . . . . 99°
In three hours " " " . . . . . 96°
In six hours " " " . . . . . 93°

Expt. 8. Rabbit; weight 64 ounces. Temperature of the air 71°. Rectal temperature 102°. Injected under the skin twenty grains of chloral. Placed in the support.

In one hour the rectal temperature was . . . . . 98°
In two hours " " " . . . . . 96°
In three hours " " " . . . . . 95°

It is, of course, perfectly well known that the temperature of rabbits may be reduced by chloral very much below the point mentioned above.

It is a very curious fact that an agent like atropia, which increases the action of the heart, and raises the arterial tension, causes a decline of temperature in the rabbit, if administered in sufficient quantity to produce paralysis and consequent cessation of voluntary movement. I am indebted to my assistant, Dr. Anderson, for a number of observations made in my laboratory with atropia. I select one experiment to illustrate this point.

Expt. 9. Rabbit; weight 64 ounces. Temperature of rectum 102°. Temperature of air 78°. Injected under the skin one-half grain of atropia. Allowed to run about the laboratory.

In one hour the temperature of the rectum was . . 103°
In one and a half hours the temperature of the rectum was 103°

The rabbit was then fastened in the support.

In thirty minutes the rectal temperature was . . . 102°
In fifty " " " " . . . 101°.5
In an hour " " " . . . 101°
In one and a half hours the rectal temperature was . 100°.5
In four hours " " " . 98°

Expt. 10. Rabbit; weight 62 ounces. Temperature of the rectum 103° Temperature of air 78°. Injected, subcutaneously, two drachms of alcohol.

In five minutes the rectal temperature was . . . 104°
In fifteen " " " " . . . 103°.5
In forty-five minutes the rectal " " . . . 102°
In an hour " " " . . . 101°

My notes say that in five minutes there was "muscular paresis with excitement," and this corresponded to the maximum elevation of temperature. When "complete muscular relaxation" ensued, "with dilated pupils," the temperature declined.

It appears to be established, from the foregoing facts, that any agent producing complete muscular relaxation, whatever its mode of action in other respects, causes a decline in temperature; and the more complete the immobility consistent with the maintenance of respiration and circulation, the more decided the reduction of the body-heat. It must be obvious to every intelligent reader that I do not mean to include in the above formula all antipyretics, for the mode in which these agents depress temperature varies greatly.

The lowering of the temperature caused by the maintenance of an immobile condition of the body is overcome by artificial heating. For the purpose of this inquiry I employed a hot-air chamber, large enough to contain the rabbit support and an apparatus for maintaining a uniform heat. The temperature of the chamber was registered by a thermometer projecting into the interior, the scale being external. The results were so uniform that I need not now occupy space in detailing the individual observations. The experiments as narrated above were first made, and then without delay the rabbits were placed in the hot-air chamber, the thermometer *in situ*. The temperature of the hot-air chamber was usually 130°. Several observations were made with the air of the chamber at 160°. The rise of temperature which followed the introduction of the animal into the hot air was more rapid when the temperature of the hot-air chamber was at the maximum. The results of heating were constant, and I state the averages:—

In fifteen minutes the temperature rose . . .	0°5
In thirty minutes " " " . . .	2°
In one hour " " " . . .	3°.5
In two hours " " " . . .	1° to 2°

above normal.

The same results were obtained when the temperature had been reduced by the antipyretics, as detailed above. When the temperature had, by artificial heating, been raised to normal, it declined again when the rabbit was placed, still in the support, in the external air.

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ART. III.—*The Treatment of Certain Injuries of the Head, accompanied by Lesions of the Brain and its Membranes.* With illustrative cases. By W. B. RODMAN, M.D., of Frankfort, Ky.

SINCE surgery has been an art, its authors, teachers, and practitioners have differed widely in their views of the proper treatment for the various wounds of the skull. The subject of simple fracture with depression (with or without symptoms of compression of the brain) has been an especial ground of contention. I believe that most surgeons are agreed on the treatment of compound fracture of the skull with depression, but very few of them dare to treat a simple fracture as they would a compound one. They fear that hemorrhage, inflammation, erysipelas, and encephalitis in its various forms, will supervene if an incision is made when the fracture